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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/505,140	08/19/2004	Peter Zentgraf	038665.55264US	1683
23911	7590	12/19/2005	EXAMINER	
CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300			NGUYEN, CUONG H	
			ART UNIT	PAPER NUMBER
			3661	

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/505,140	ZENTGRAF, PETER	
	Examiner	Art Unit	
	CUONG H. NGUYEN	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/19/04 (the IDS).
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 8,12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-11 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/19/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is the answer to the Pre. Amendment received on 8/19/2004.
2. Claims 1-12 are pending in this application, wherein claims 8, and 12 were cancelled.

Priority

3. This application claims priority of UK 0203950.1 (2/20/2002) and PCT/GB03/00708 (2/19/2003).

Information Disclosure Statement

4. The USPTO requests applicant to provide Foreign Patent Documents, and Non-Patent Literature Documents cited on IDS (filed 8/19/2004) for consideration.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 9, and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- A. Claim 9 is directed to a system, then it is an independent claim itself (it should not be written as "as claimed in claim 1" – this is vague and indefinite within an independent claim such as claim 9). The examiner respectfully submits that it has 35 USC 112, 2nd para. Problem for using the word "adapted and arranged to carry out a method" (no step is listed here for that claimed method).

B. Claim 11 is directed to a computer program, then it is an independent claim (it should not be written as “as claimed in claim 10” – this is vague and indefinite within an independent claim such as claim 11). The examiner respectfully submits that it has a problem for using the word “it” (no pronoun should be used because there is a confusion here for: a computer, a program, an output port .etc.). In this sense, it fails to comply with section 112, 2nd para., in failing distinctly to claim what applicant insists is his actual invention. There is no positive recitation of any structural cooperation among “claimed element” in fact based on the ground that the claim is incomplete, and therefore, indefinite and in this way does not conform to the requirement of 35 USC 112.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraph of 35 U.S.C. § 102 in view of the AIPA and H.R. 2215 that forms the basis for the rejections under this section made in the attached Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

35 U.S.C. § 102(e), as revised by the AIPA and H.R. 2215, applies to all qualifying references, except when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. For such patents, the prior art date is determined under 35 U.S.C. § 102(e) as it existed prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. § 102(e)).

6. Claims 9, and 11 are rejected under 35 U.S.C. § 102(e) as being anticipate by Carrico et al.(US Pat. 6,937,968).

A. Claim 9 is rejected on 35 USC 102(e) because “adapted and arranged to carry out a method ...” is merely an intent of use (not a limitation for an utility claim), (see Carrico et al., the abstract).

B. Claim 11 is rejected on 35 USC 102(e) because “will enable it to operate in a system ...” is merely an intent of use (not a “positive” limitation); again, storing is also merely an act of “loaded into a computer”; many programs do similar act as claimed (see Carrico et al., claim 5).

7. Claims 1-2, 5, and 10 are rejected under 35 U.S.C. § 102(e) as being anticipate by Snell (GB 2268138 A).

A. As to Claims 1 and 10: Snell teaches a method and a system of balancing thrust signals of a spacecraft, comprising:

- (a) generating a number of thrust command signals (see Snell, Fig.1 engine 8, nozzle 12, and para. 57);
- (b) comparing levels of thrust signals in relation to constraints/threshold (see Snell, page 1 lines 6-10);
- (c) identifying which thrust signals/demands can operate (see Snell, page 1 line 6 “if an engine fail”; and page 1 lines 14-23); and which thrust signals/demands can not operate in accordance with capabilities/predetermined constraints (see Snell, page 1 lines 25-29); and

(d) balancing said thrust signals/demands (see Snell, page 1 lines 20-21, and 25-29; page 2 lines 8-28; and page 3 lines 22-34).

B. As to claim 2: Snell also teaches about changing/shifting available thrust signals/demands on an aircraft (see Snell, page 3 lines 31-34).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Snell

(GB 2268138 A), in view of Madhani et al. (US Pat. 6,786,896).

The rationales and reference for above rejection of claim 1 are incorporated.

Snell does not disclose about using null space vectors for balancing calculations.

However, Madhani et al. apply null space vectors for controlling a moving object (see Madhani et al., col.33 lines 28-34).

It would have been obvious to one of ordinary skill in the art at the time of invention to use null-space vectors of Madhani et al. in mathematic computing for control balances of a spacecraft as Snell taught for an advantage of minimizing the use of other functions while determining spacecraft's speed of motion inside a null space; this is also to prevent undesirably fast motions.

6. Claims 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snell (GB 2268138 A), in view of Ocampo (US Pat. 6,341,749).

The rationales and reference for above rejection of claim 1 are incorporated.

A. As for dependent claims 6: The examiner submits that for a movement balancing, a balancing step (e.g., a race car using a spoiler), and a modulation step (e.g., a race car makes turnings on a curb) could be done separately (i.e., “independently”).

B. As for dependent claims 4: Snell does not disclose about selecting thresholds with a constant total mass flow for thrust calculations.

However, Ocampo utilizes constant total mass flow for calculations (see Ocampo, col.4 lines 14-19).

It would have been obvious to one of ordinary skill in the art at the time of invention to use constant total mass flow as Campo’s suggestion in Snell’s calculation of thrust balancing because this calculation take into account that if there is a degradation in thrust, a function of accumulated thruster on-time would be simultaneously degraded.

Allowable Subject Matter

7. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. Claims 1-6, and 9-11 are not patentable.

Claim 7 is objected.


9. Note: Claim 11 would be rejected according to 35 USC 101 for non-statutory when solely claiming a computer program – that program must be executed on a computer to operate as desired (“loaded in a computer” could be storing into a computer’s hard drive).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CUONG H. NGUYEN whose telephone number is 571-272-6759. The examiner can normally be reached on 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, THOMAS G. BLACK can be reached on 571-272-6956. The Rightfax number for the organization where this application is assigned is 571-273-6759.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Please provide support, with page and line numbers, for any amended or new claim in an effort to help advance prosecution; otherwise any new claim language that is introduced in an amended or new claim may be considered as new matter, especially if the Application is a Jumbo Application.


CUONG NGUYEN
PRIMARY EXAMINER

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Fig.1.

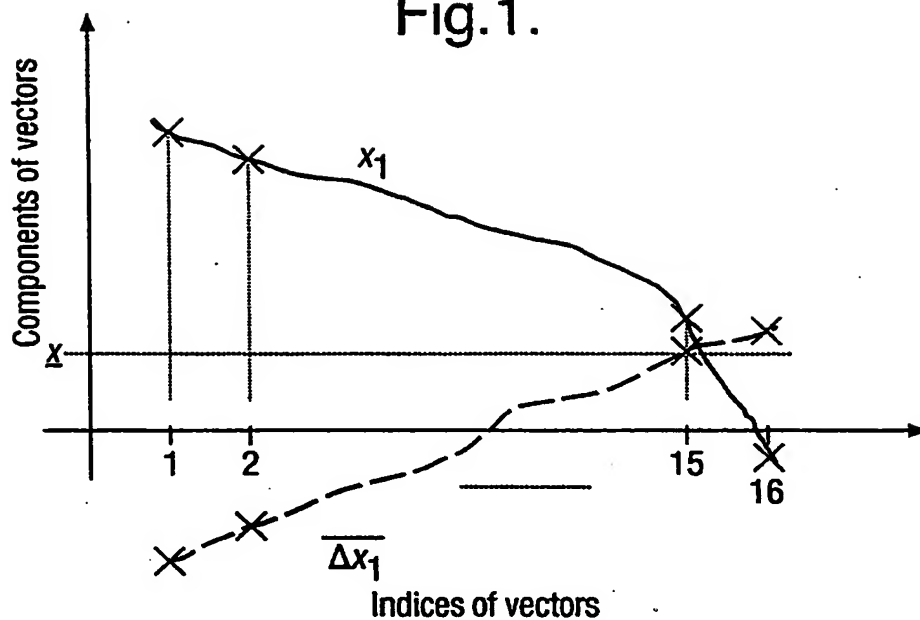
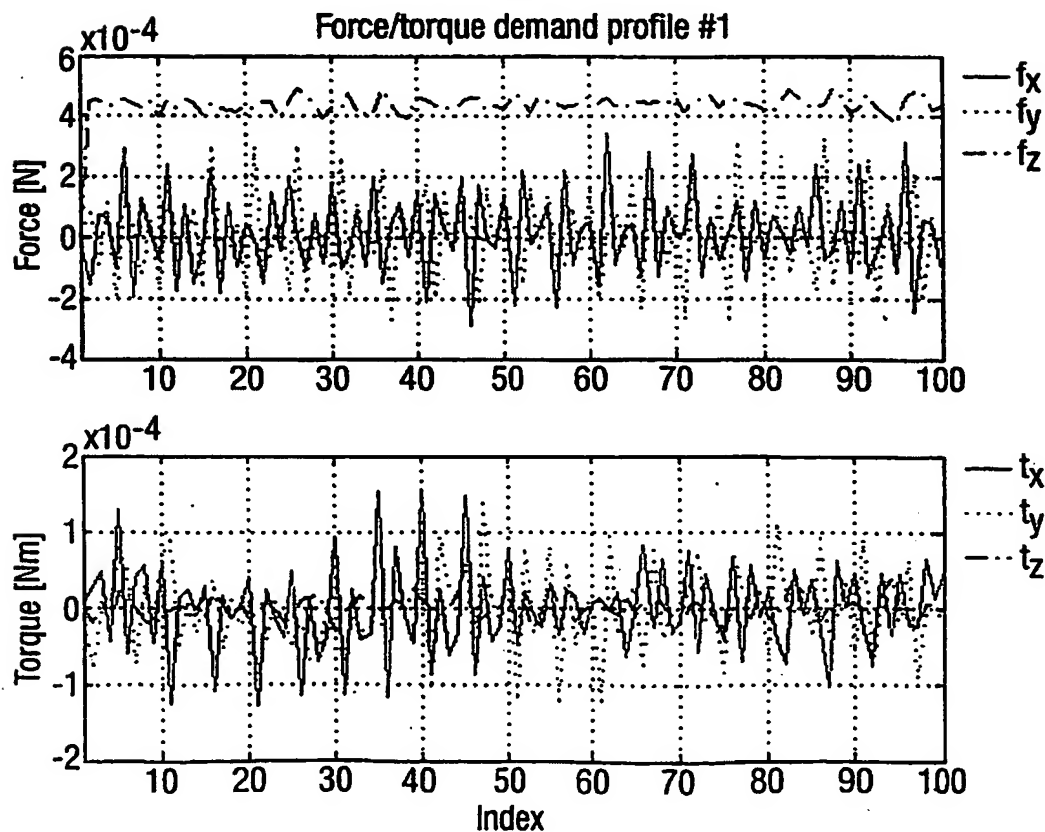
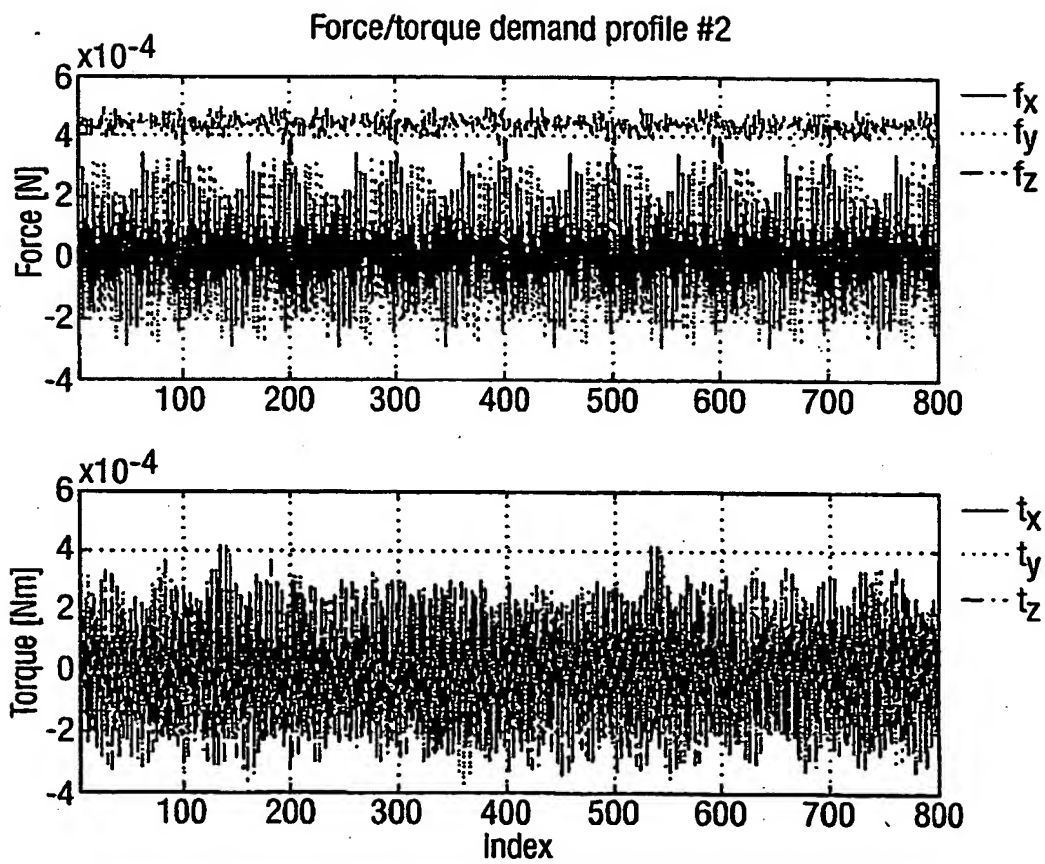


Fig.2.



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Fig.3.



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Fig.4.

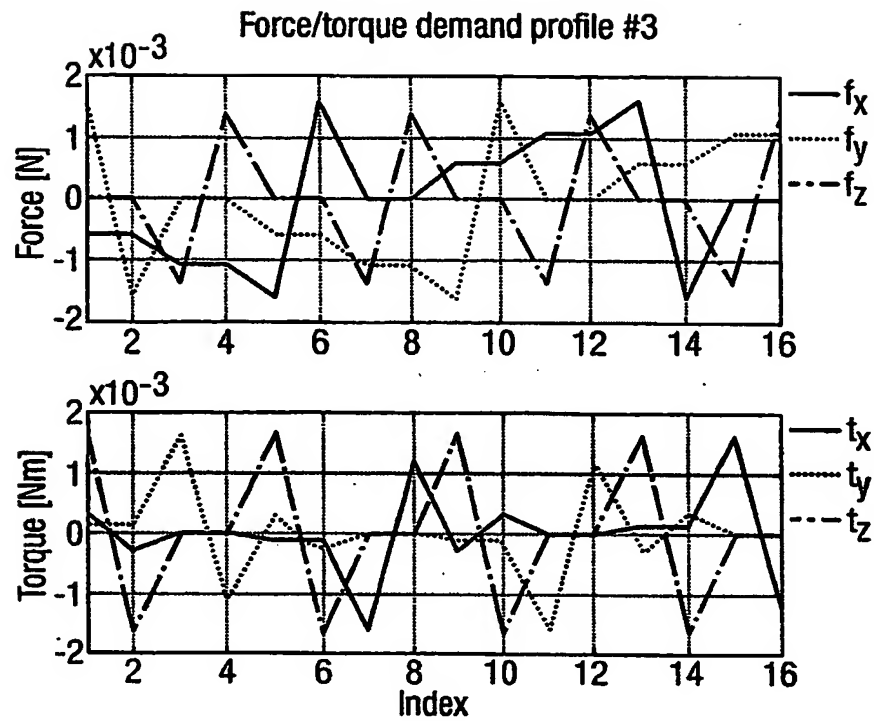


Fig.5.

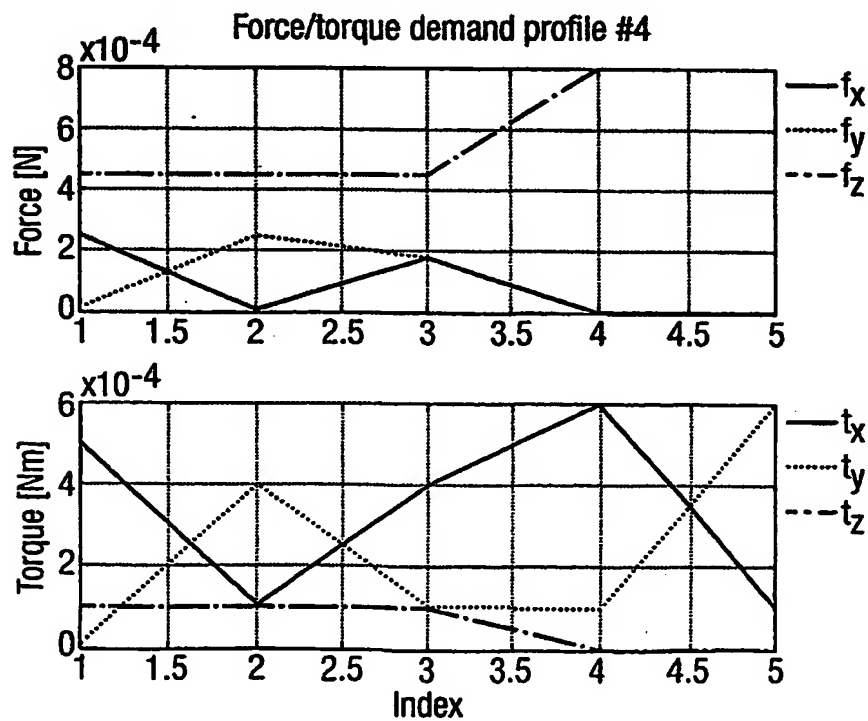


Fig.6.

Error signal force demand-thrust provided for profile #1

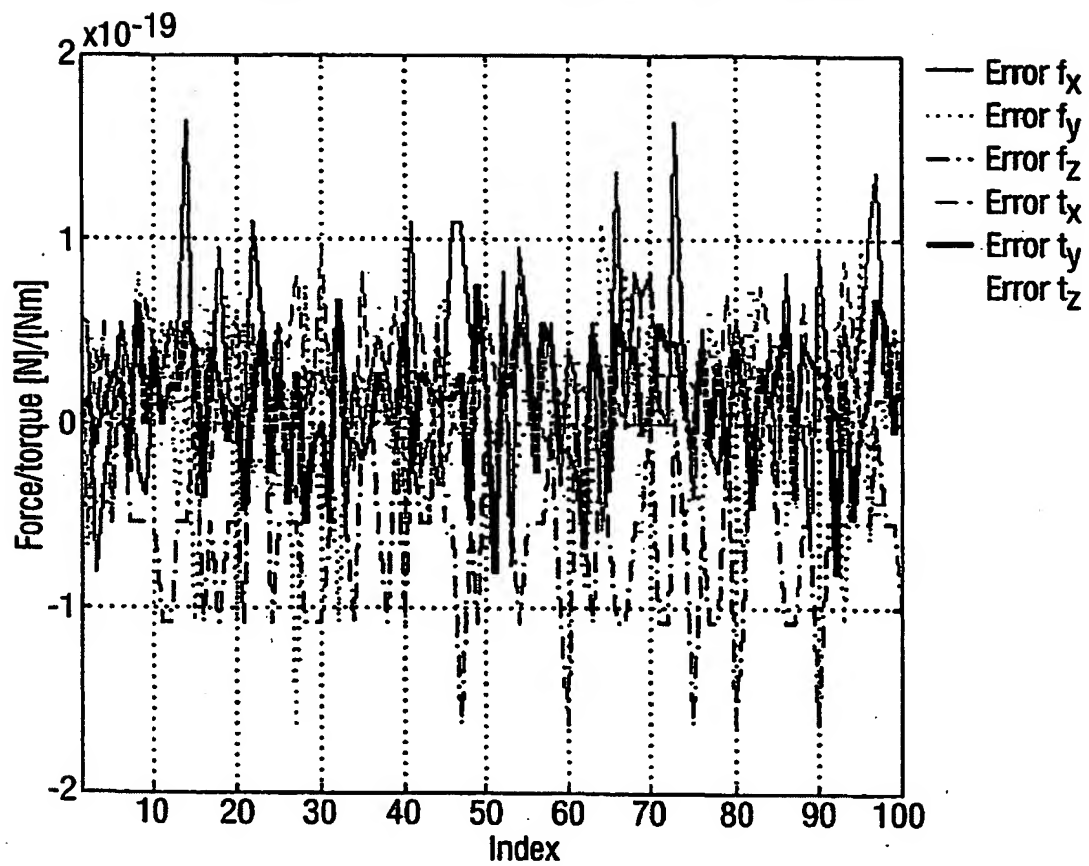
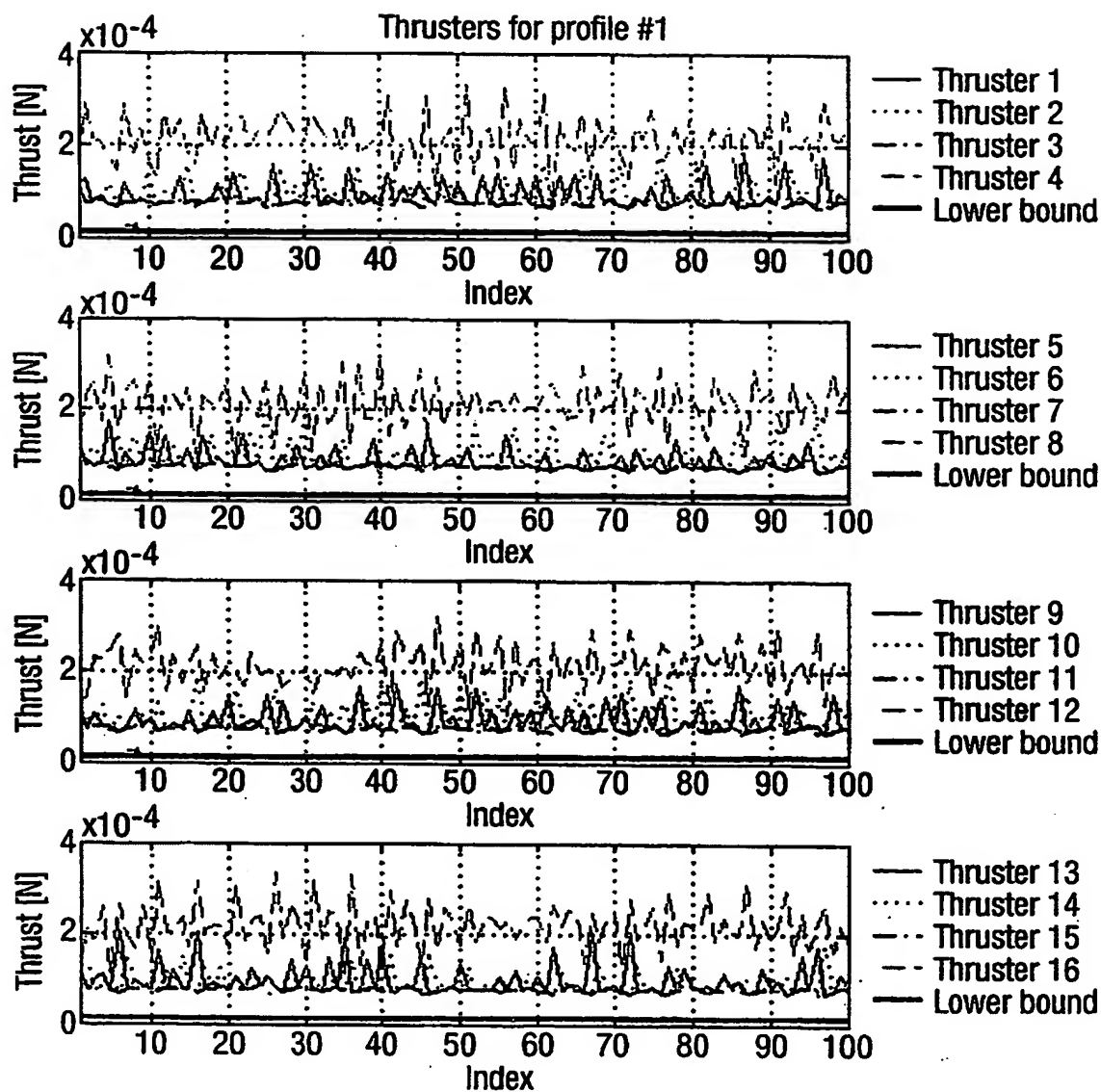
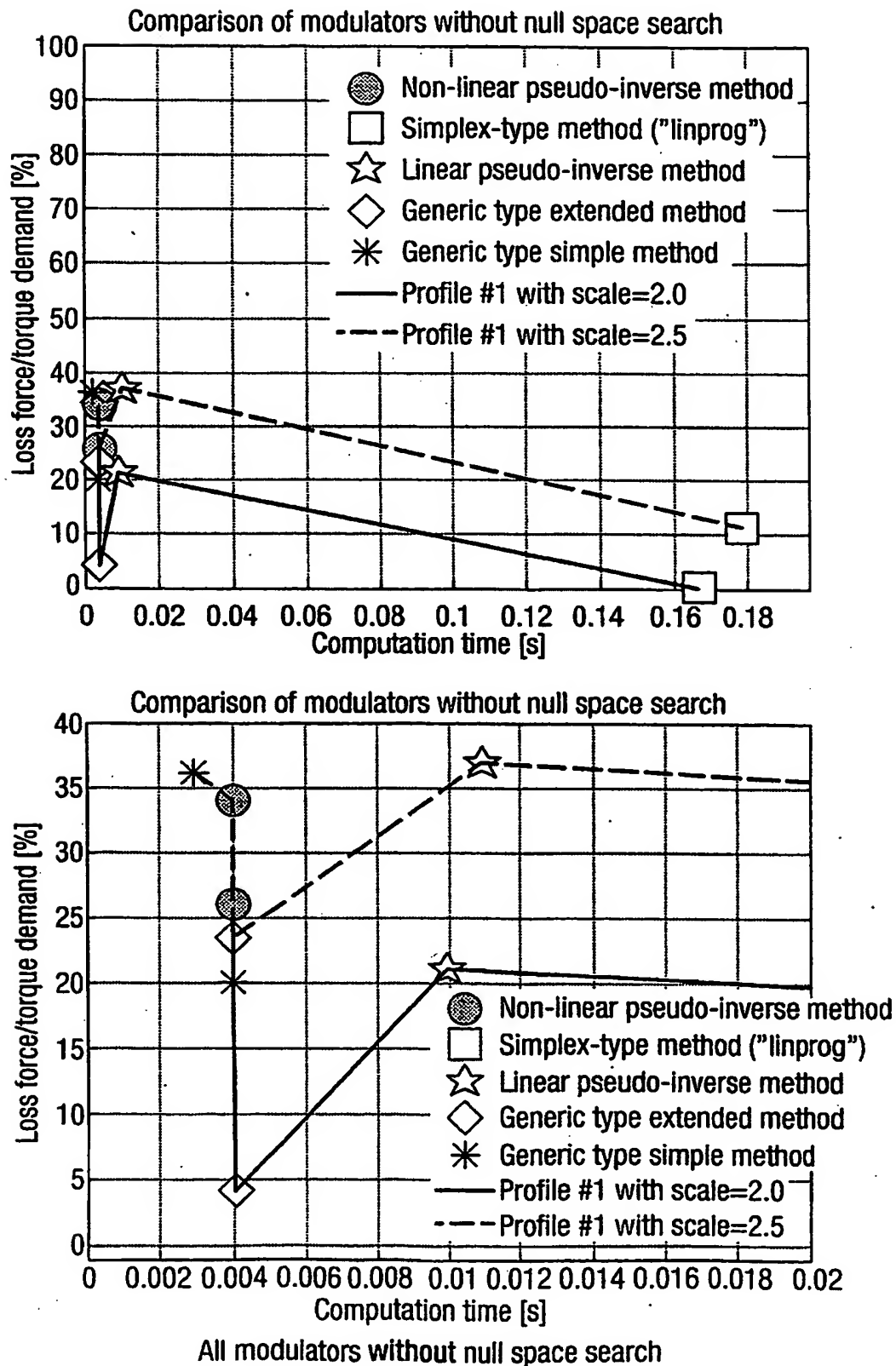


Fig.7.



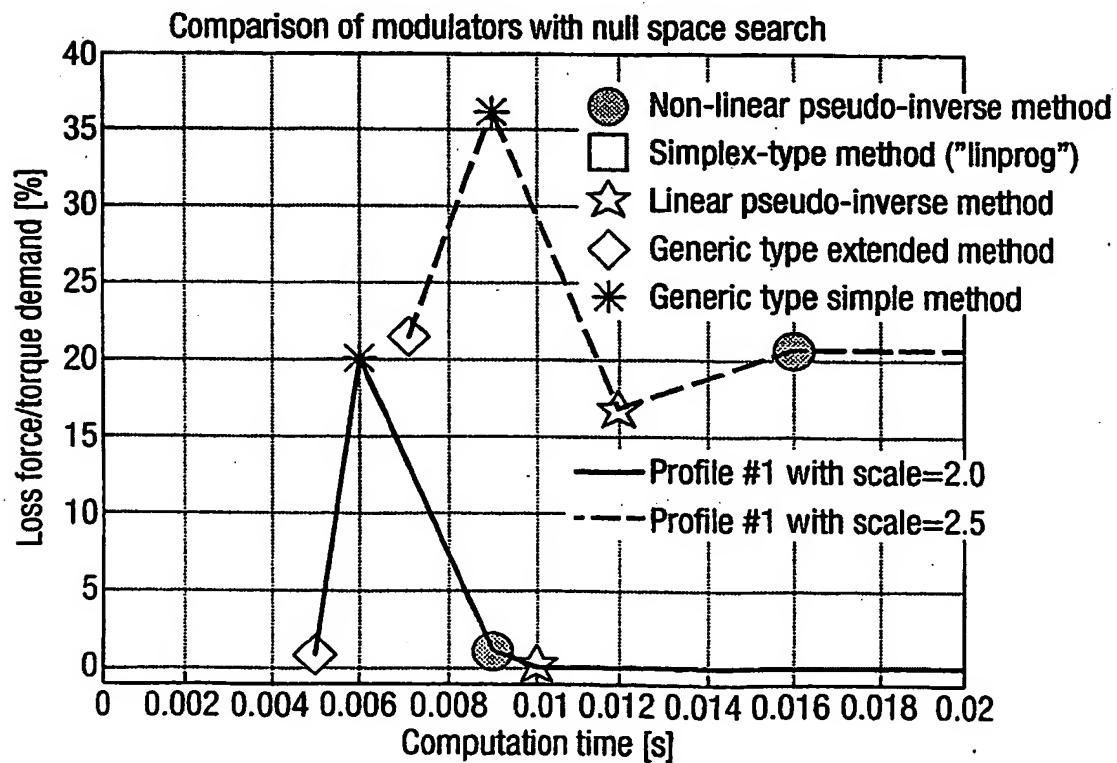
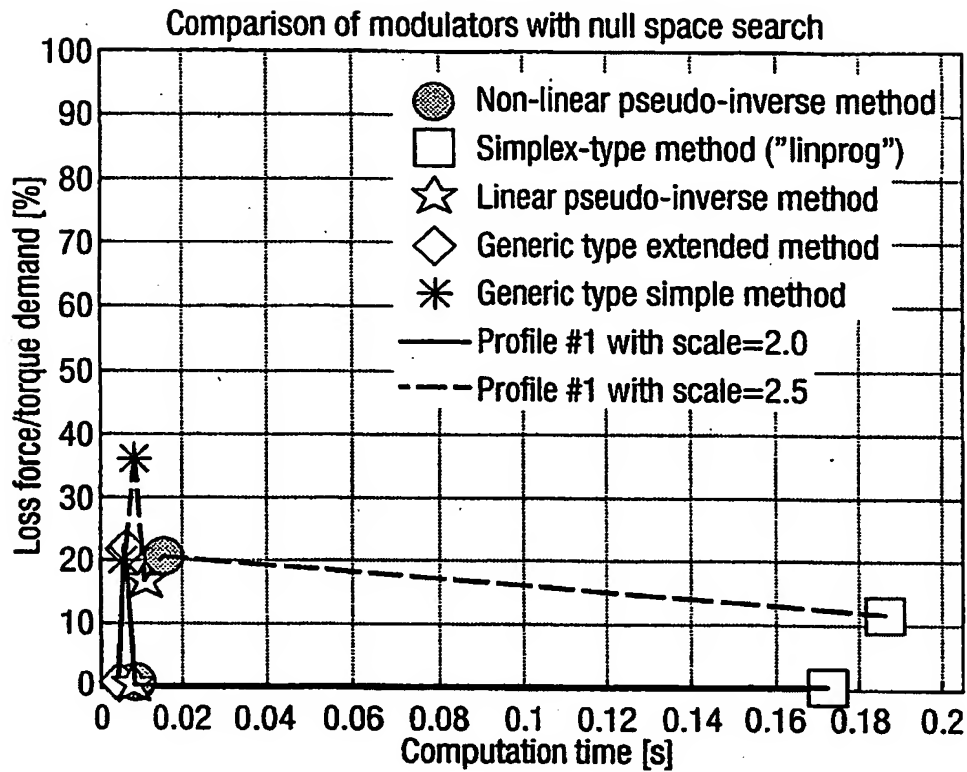
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Fig.8.



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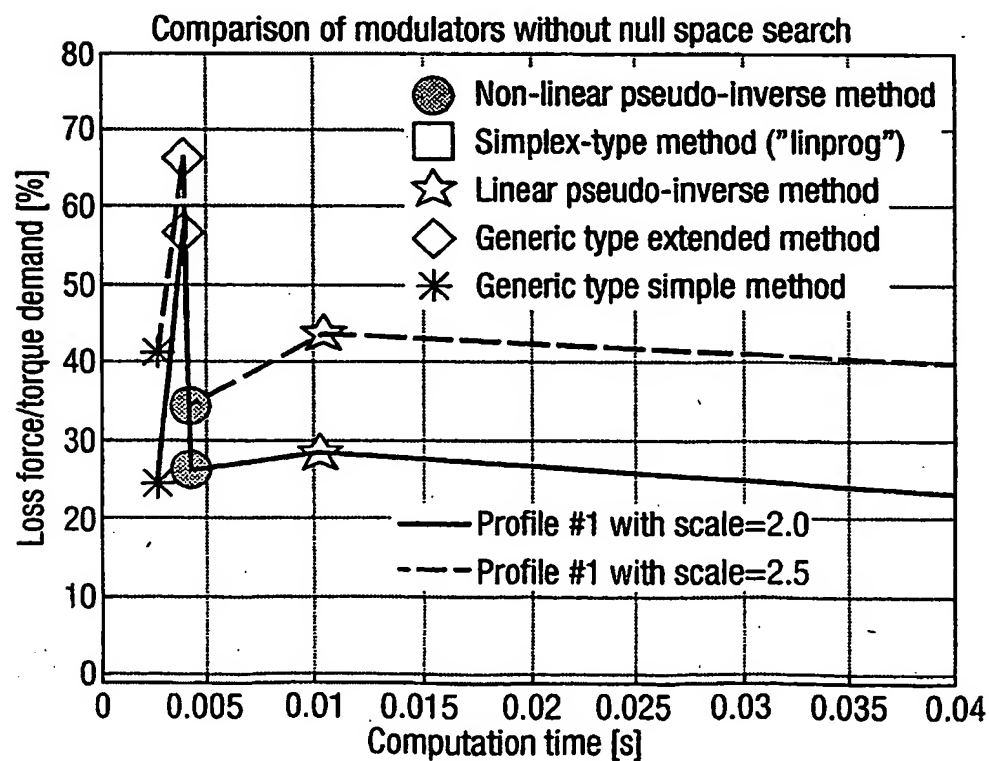
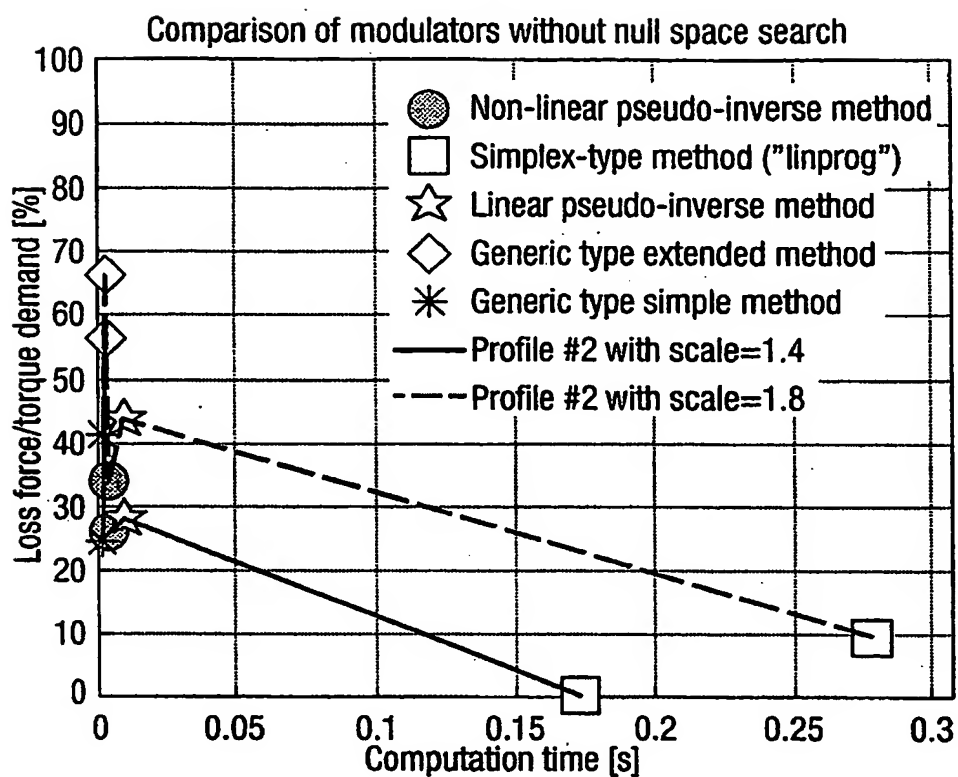
Fig.8 (Cont).



All modulators with null space search

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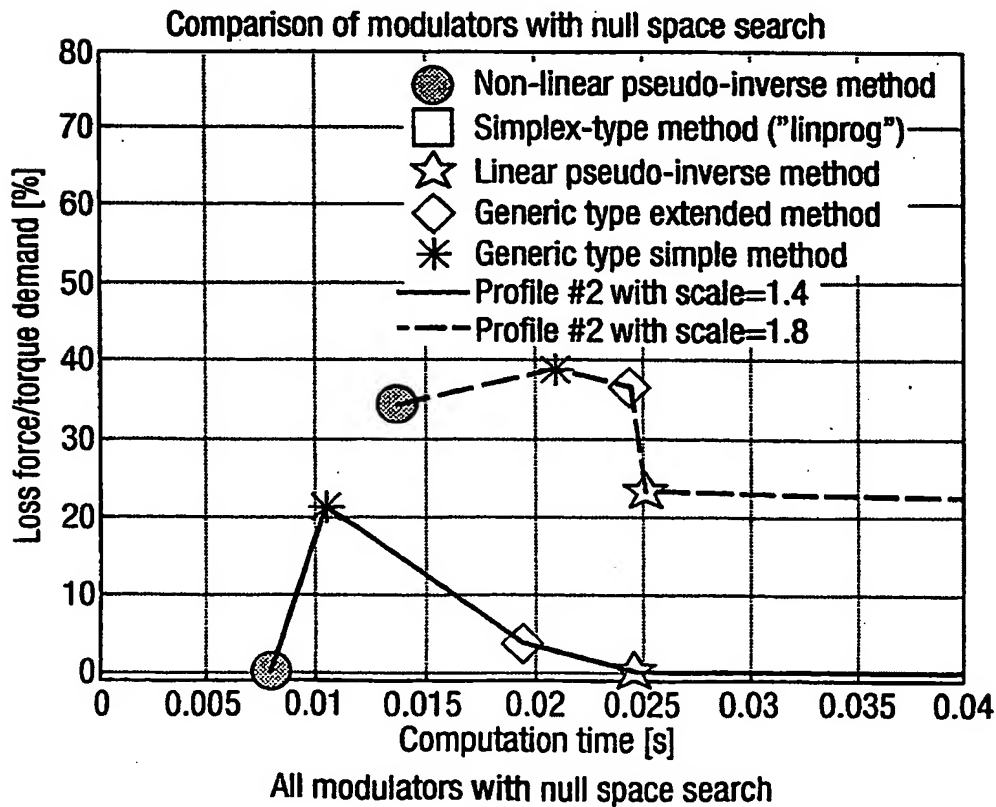
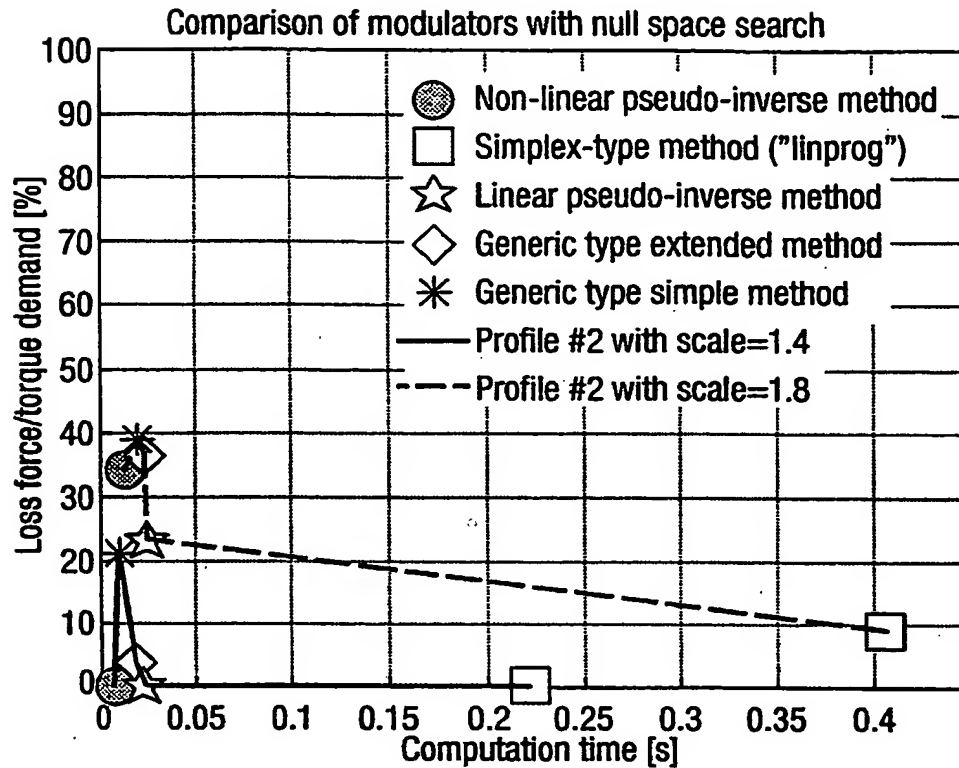
Fig.9.



All modulators without null space search

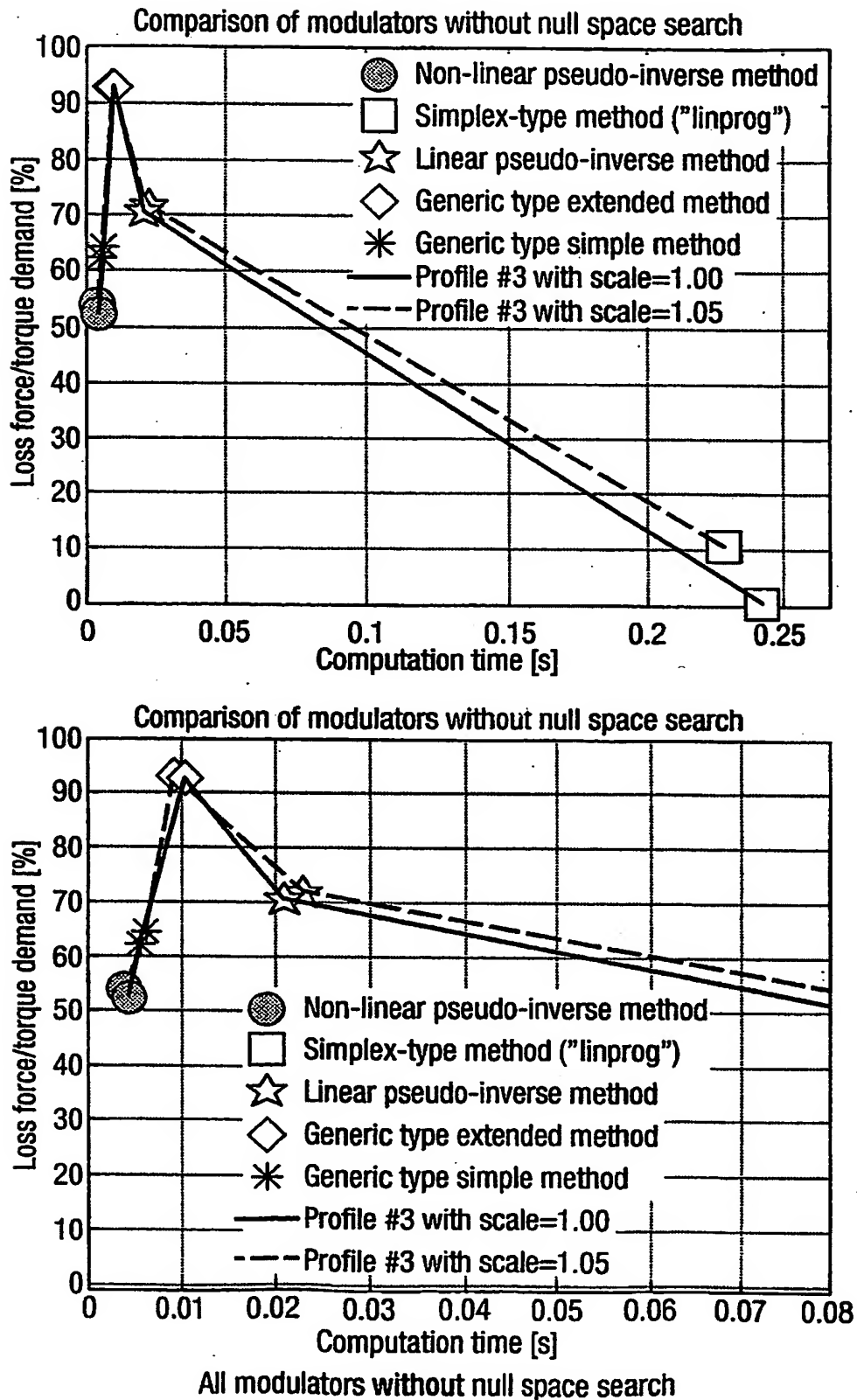
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Fig.9 (Cont).



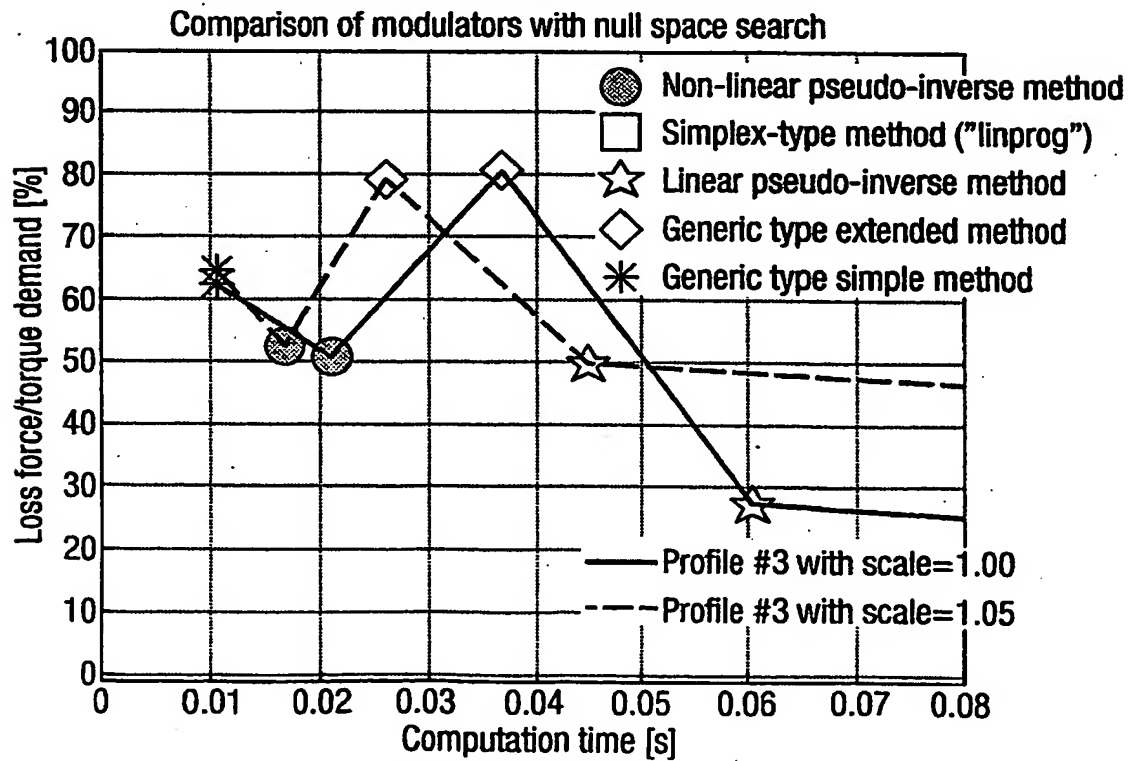
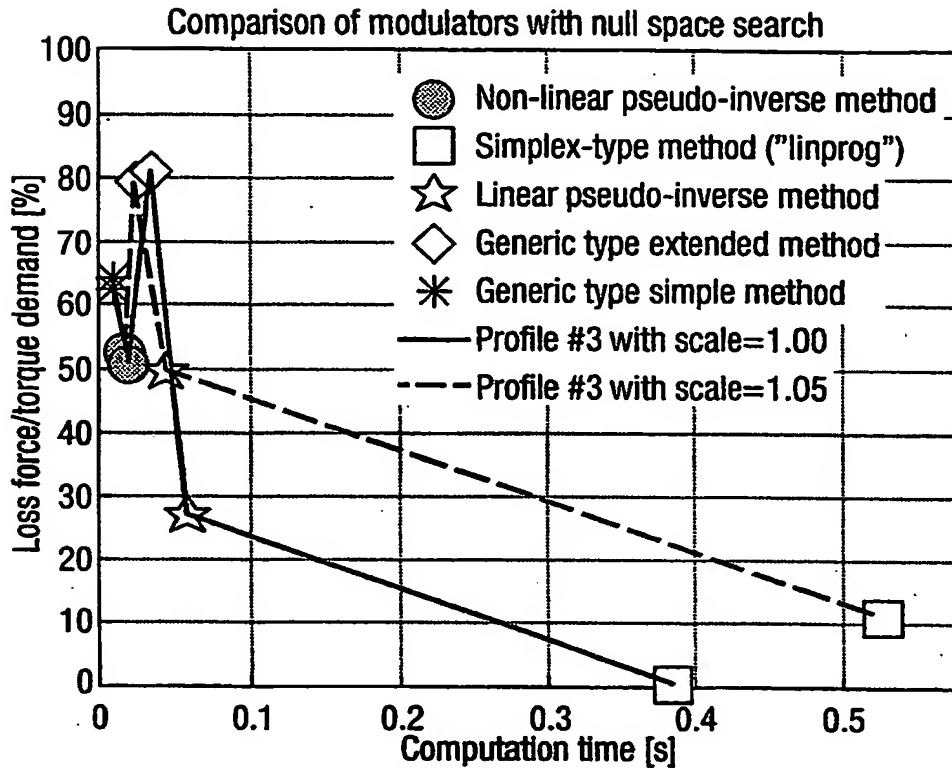
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Fig.10.



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Fig.10 (Cont).



All modulators with null space search

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Fig.11.

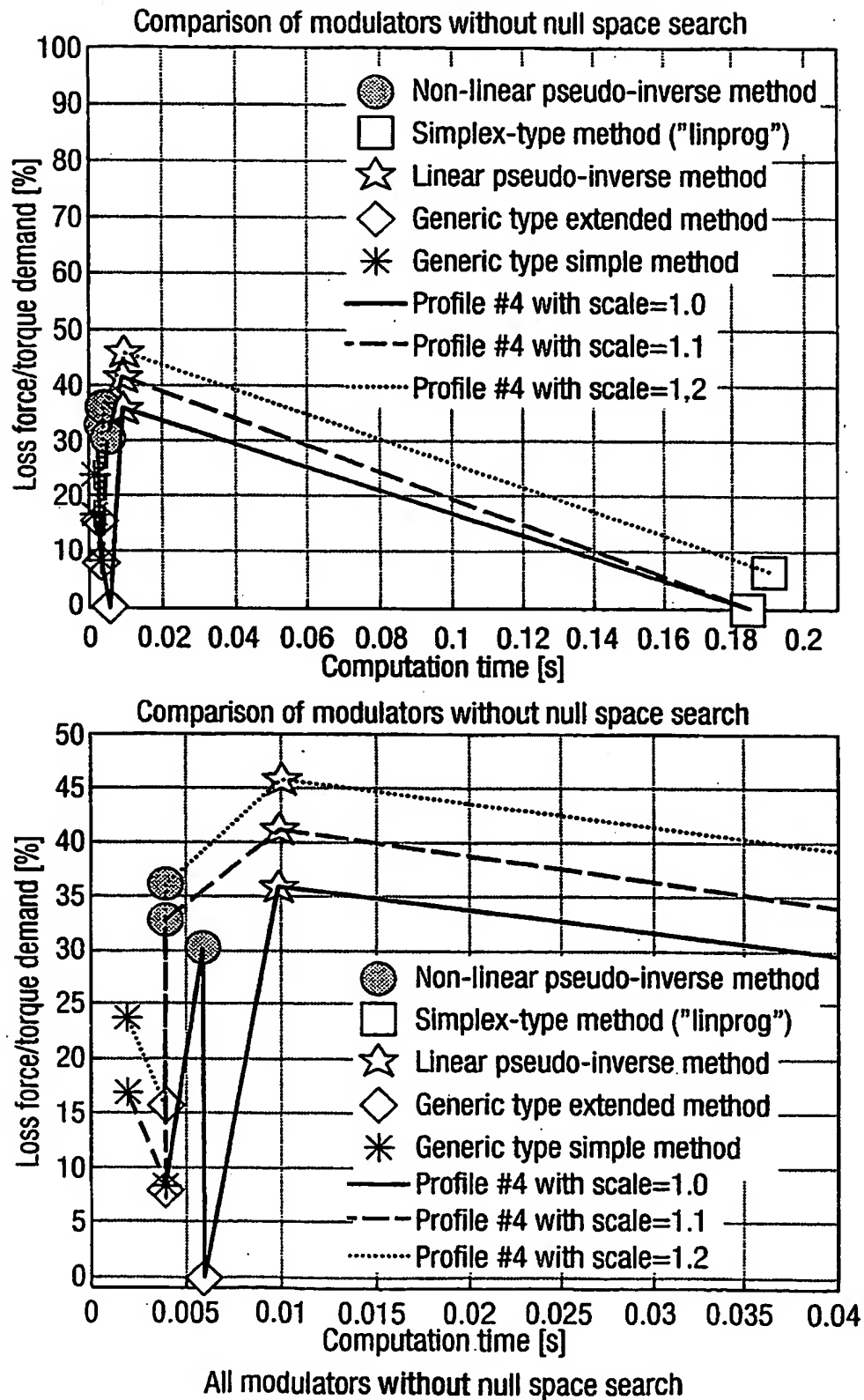


Fig.11 (Cont).

